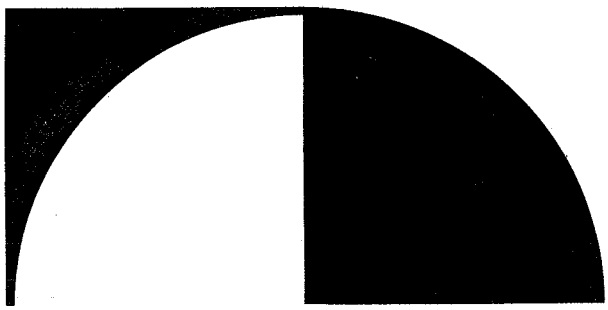

Nakamichi 620

Power Amplifier Operating Instructions

WARNING
TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE

Please record the Model Number and Serial Number in the space provided below and retain these numbers. Model Number and Serial Number are located on the rear panel of the unit.

Model Number : Nakamichi 620

Serial Number : _____

CONTENTS:

Control Functions 1,2
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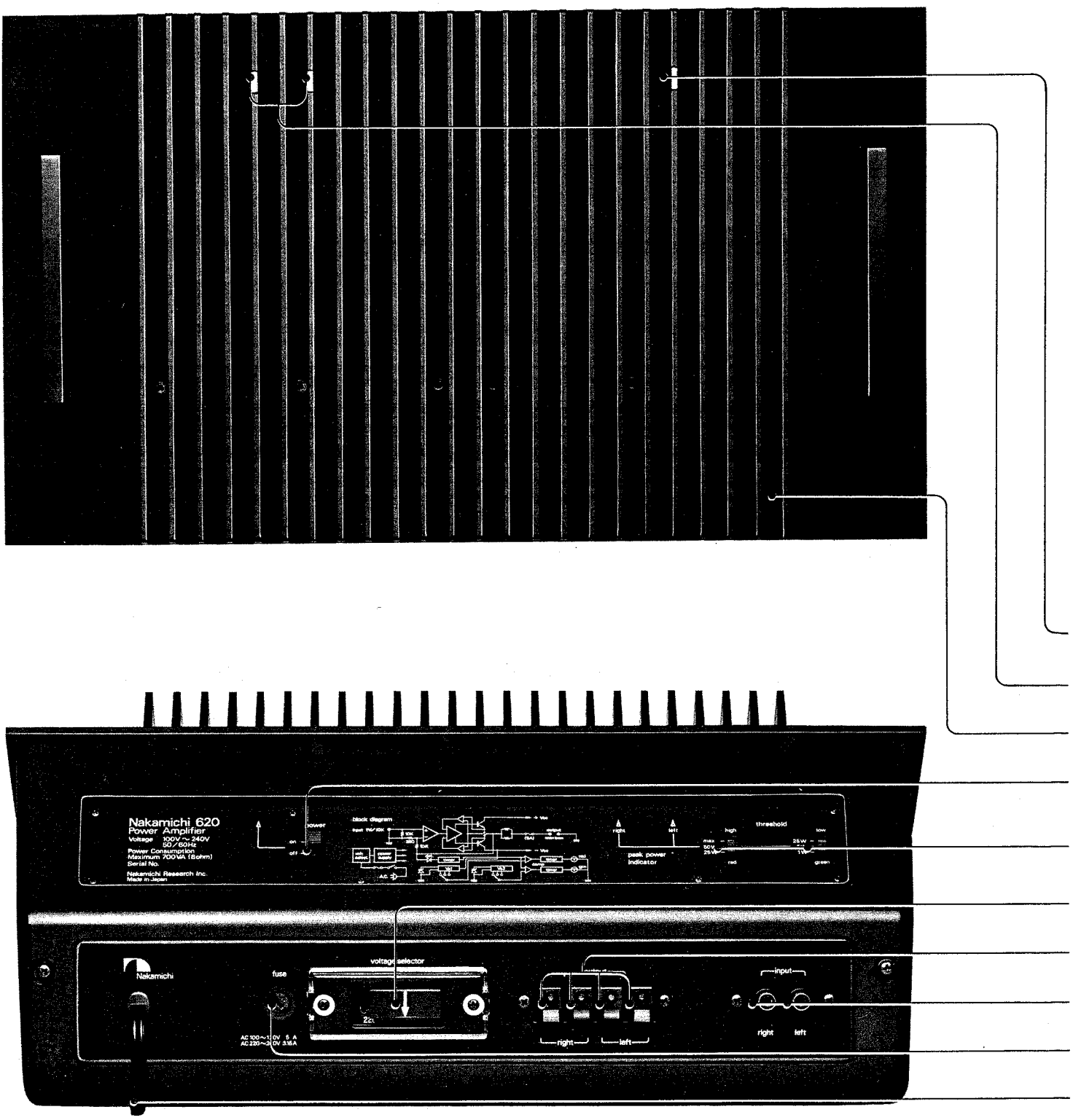
We thank and congratulate you for purchasing
this Nakamichi 620 Power Amplifier.

If you are a previous Nakamichi customer,
it will be no surprise to you that you own
one of the very best power amplifiers
available now and for many years to come.
If the 620 is your first Nakamichi,
we hope it will lead you to an understanding of
our underlying philosophy:
to create only those products
that only Nakamichi can create.

To ensure that you fully realize the capabilities of your 620,
we ask that you carefully read
this manual in its entirety before attempting operation.

NAKAMICHI RESEARCH, INC.

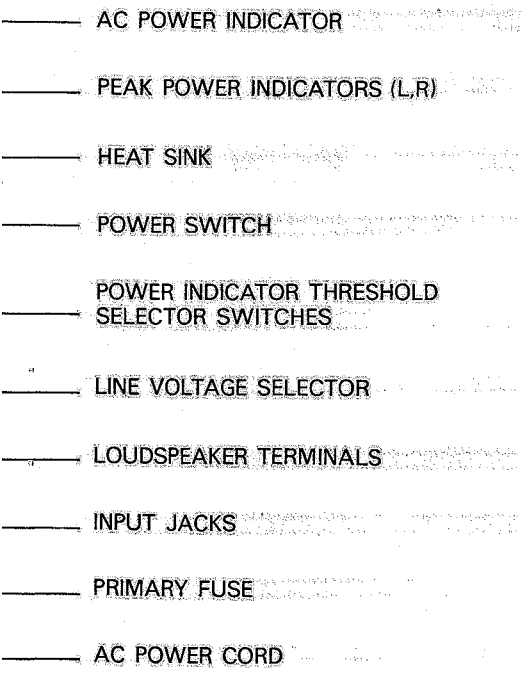
Control Functions



Precautions

Since the 620 is capable of delivering momentary power levels of up to 250 watts per channel into 8 ohm Loudspeakers, it is strongly advised that you observe the following precautions:

1. Make sure that the AC Power to the 620 is "off" before attempting any of the interconnections.
2. The 620 has been designed with a power supply of tremendous energy storage capacity for superb low frequency performance. The power supply, therefore, may continue to energize the 620's amplification circuits for as long as five minutes after the power has been turned off. If input connections to the 620 are to be altered immediately after turning off the power, disconnect the loudspeakers first.
3. Although the 620 is fully protected against short-circuited outputs, take care to avoid shorting the output wires. A prolonged short circuit will cause excessive heat dissipation.



Connections

1. Preamplifier or Control Amplifier

Using a standard phono plug type stereo connecting cable, connect the preamplifier output to the Input jacks on the rear panel of the 620. If the 620 is to be used with the Nakamichi 610 Control Preamplifier, utilize the "Monitor Out" jacks on the 610.

2. Loudspeakers

Connect the left and right loudspeakers to the appropriate terminals on the rear panel of the 620.

NOTE:

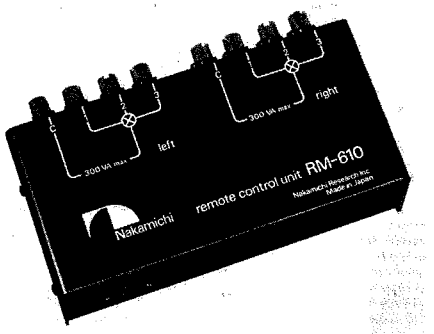
(1) Observe the polarity at the power amplifier and loudspeaker terminals. Both loudspeakers should be connected in the exactly same manner.

(2) Although the 620 is virtually unaffected by small capacitances and/or DC resistances at its outputs, overall loudspeaker performance may be slightly degraded by the use of light gauge speaker wire. Heavy duty speaker wire is highly recommended.

3. RM-610 Remote Control Unit

Remote selection of up to three loudspeaker pairs becomes possible when the 620 is used in conjunction with the Nakamichi 610 Control Preamplifier and the RM-610 remote control unit. Refer to the 610's Operating Instructions.

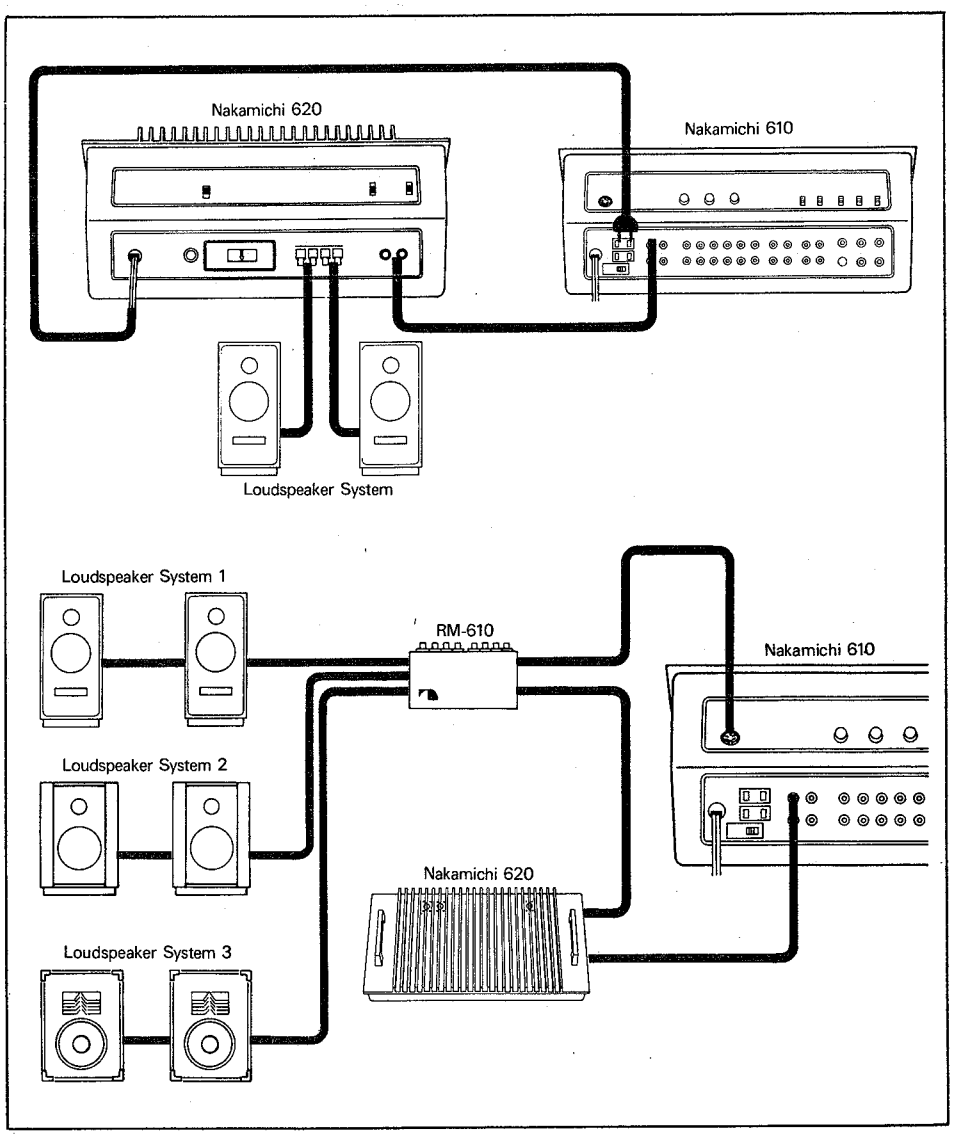
Caution: The 620 has been designed to operate into load impedances of 4 ohms or greater. Make sure that the loudspeaker impedance, or the combined equivalent impedance of any loudspeaker combination for either channel, is 4 ohms or higher.



RM-610 Remote Control Unit

4. AC Power

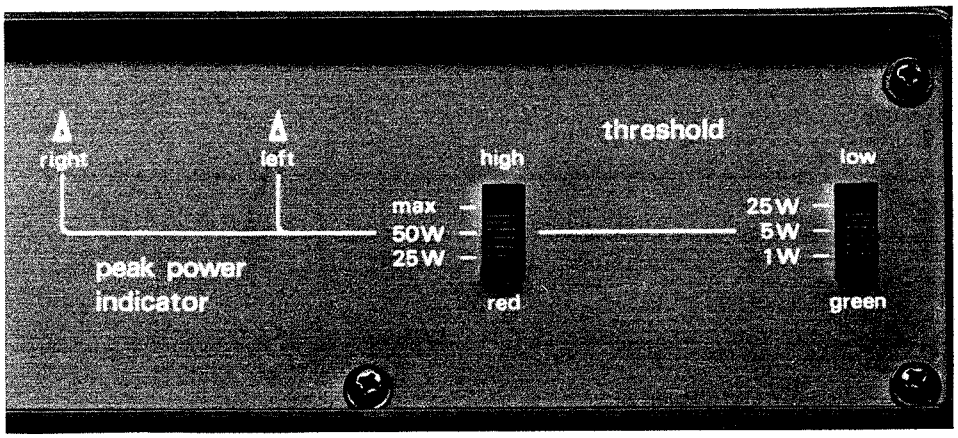
The AC Power Cord of the 620 may be plugged into the switched outlet on the preamplifier or control amplifier in use. In this manner, by leaving the power switch of the 620 "on" the AC Power to the 620 will be controlled by the Power Switch on the preamplifier. Make sure that the switched outlet on the preamplifier is rated at 300 VA or higher (the 620 may be connected to one of the auxiliary outlets of the 610).



There are no controls that need to be adjusted on the 620. In normal use all adjustments, such as listening level or channel balance, are made with the controls of the preamplifier or control amplifier. The only features on the front panel of the 620 are indicator lamps inset into the heat sink fins. The pilot lamp to the right will glow orange when the power to the 620 is turned on. The two Peak Power Indicating Lamps to the left will glow green and red to show that certain output power levels have been reached. The power points at which these lamps will glow can be preset using the Power Indicator Threshold Selector Switches on the rear panel of the 620.

The switch marked "Low" sets the point at which the lamps will glow green. The choices are 1, 5 and 25 Watts (ref. 8 ohm load). The switch marked "High" sets the red indication for 25, 50 or "Max" Watts (ref. 8 ohm load). When the latter switch is set for "Max", the red will indicate amplifier clipping, which will occur at 110 to 130 Watts per channel with an 8 ohm load. If both switches are set for 25 Watts, the Peak Power Indicator Lamps will glow red only at that power point.

Set the "Low" and "High" Threshold Selector Switches as required for normal listening levels. For example, red may be set to show a power level which most closely approximates the peak power handling capacity of the loudspeakers. Green can be set to indicate an intermediate power level that is frequently reached in normal listening.

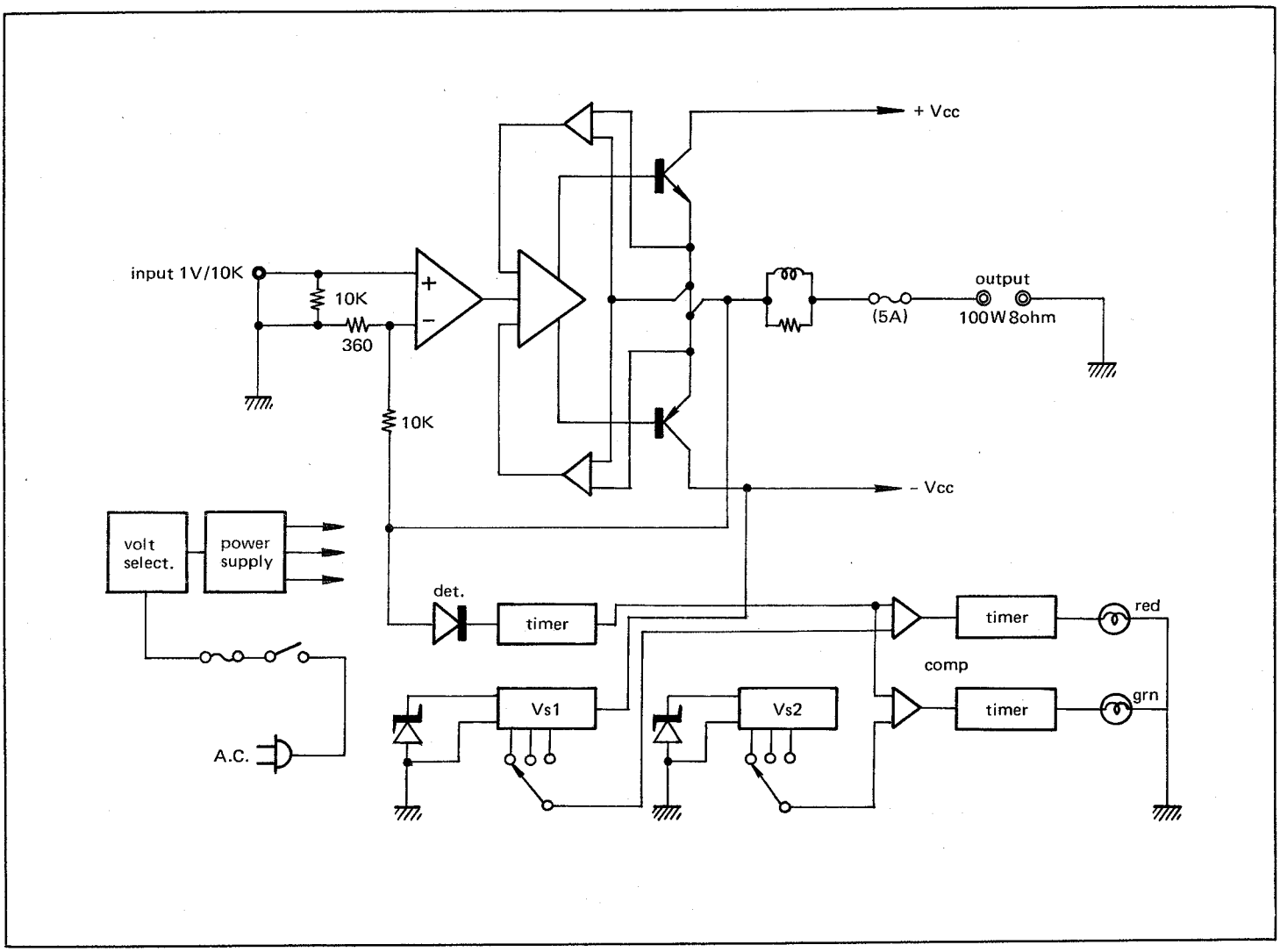


NOTE:

(1) The power level indications on the Threshold Selector Switches are accurate only for an 8 ohm load. If a 16 ohm loudspeaker is to be used, divide the indicated power levels by two. Load impedances between 4 and 8 ohms will also require minor correction of the indications in that the actual power levels will be slightly higher than the preset indications.

(2) The Peak Power Indicating Lamps are extremely fast in responding to transient signals. A 0.1 millisecond power pulse will cause the peak indicator to light and stay "on" for 0.3 second so that the peak can be readily observed. These lamps are capable of responding to power "spikes" that escape measurement on the best peak reading meters. Do not be surprised, therefore, if the Red Clipping Indicator (i.e. when the "High" threshold switch is set for "Max") comes on more frequently than expected. Momentary clipping of this nature does the amplifier and loudspeakers no harm. The 620's overload characteristics are such, furthermore, that transient clipping is impossible to detect by ear with the vast majority of program material. This is why the Peak Power Indicator Lamps were designed into the 620.

Block Diagram



Troubleshooting Chart

Condition	Probable Cause	Remedy
No power.	1. Power switch is off. 2. Fuse is blown.	1. Make sure rear panel Power Switch is on. 2. Replace primary fuse with fast acting 5 A fuse (3 A for 220/240 V use).
No output.	1. Poor input connections. 2. Poor loudspeaker connections.	1. Check all connections from preamplifier. 2. Check all speaker wire terminations.
Channels reversed or one channel dead.	1. Improper input connections. 2. Improper loudspeaker wiring.	1. Correct input wiring. 2. Correct loudspeaker wiring.
No peak power indications.	Inappropriate threshold settings.	Reset Threshold Selector Switches.

Note:
The 620 is equipped with a thermal protection circuit which protects the unit from damage caused by excessively high operating temperatures. The circuit will disconnect the power to the amplifier when the output transistors reach an operating temperature of 80°C (176°F). This rarely occurs under normal use with loudspeakers rated at 4 ohms or higher, but an accidental short circuit, for example, may cause the protection circuit to shut down the amplifier. In the event that the protection circuit is activated, turn down the volume control, and turn off the power switch. Check all wiring to make sure there are no short circuits. The protection circuit will automatically reset once the amplifier has cooled to a safe temperature.

SERVICE INFORMATION

Please read all Notices and/or Warranty Cards included with this unit.

Although it is unlikely that your 620 will require repair, should servicing ever become necessary, please refer all such work to qualified personnel. As there are no user serviceable parts inside the unit, please do not attempt your own repairs.

Thank you for your confidence in Nakamichi products.

Performance Data

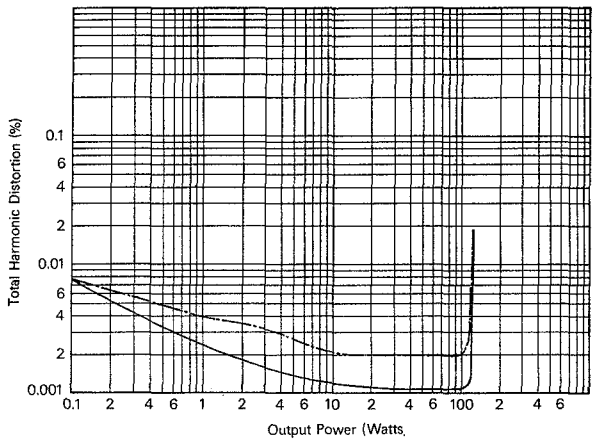
Output vs Total Harmonic Distortion

——————— : 1kHz

— · — · — : 10kHz

Load Imp: 8 ohms

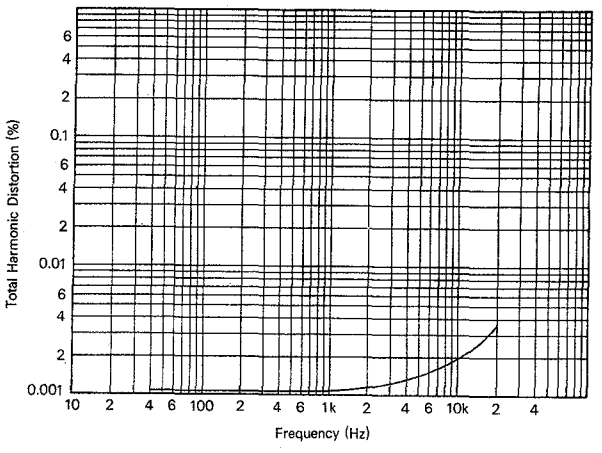
Filter: 400Hz H.P.
80kHz L.P.



Frequency vs Total Harmonic Distortion

Output: 100 Watts Constant

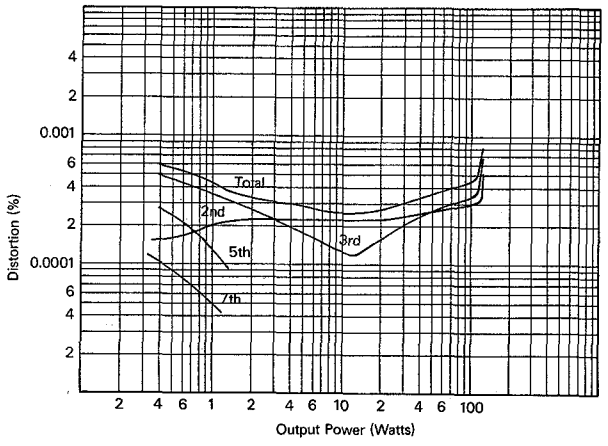
Load Imp: 8 ohms



Output vs Harmonic Distortion

Frequency: 1kHz

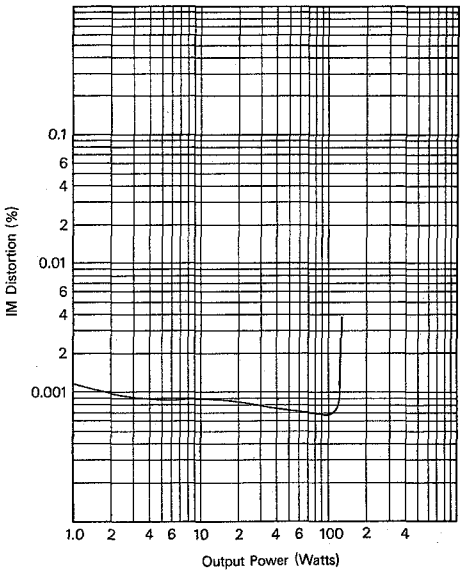
Load Imp: 8 ohms



The distortion data immediately above was obtained with the aid of a Bruel & Kjaer 3348 Real Time Analyzer. These measurements cannot be made with conventional distortion analyzers because of noise factors.

Output Power vs IM Distortion

60Hz : 7kHz (4 : 1)



Specifications, Accessories

Specifications

Power Source	100/120/220/240 V AC, 50/60 Hz
Power Consumption	50 VA at idling 700 VA with both channels driven to clipping into 8 ohm loads
Power Output	100 Watts per channel minimum continuous sine wave ("RMS") at 8 ohms, 5–20,000 Hz with less than 0.01% THD 50 Watts per channel at 16 ohms
IHF Power Bandwidth (both channels driven)	5–50,000 Hz for less than 0.1% THD 5–20,000 Hz for less than 0.01% THD 5–10,000 Hz for less than 0.005% THD
Damping Factor	Greater than 100 (1 KHz, 8 ohms)
Total Harmonic Distortion	Less than 0.002% @ 1 KHz or below Less than 0.005% @ 10 KHz or below
Intermodulation Distortion	Less than 0.002% (60 Hz: 7 KHz, 4:1, 8 ohm load, 100 W output)
Frequency Response	5 – 100,000 Hz +0, -1 dB
Input Impedance	10 K ohms
Residual Noise Level	Less than 0.05 mV (IHF A Network) Less than 0.1 mV (linear)
Signal-to-Noise Ratio	Better than 120 dB at rated output (IHF A, input shorted)
Crosstalk	Better than -70 dB @ 1 KHz
Peak Power Indicators	Green at 1 W, 5 W, 25 W, selectable Red at 25 W, 50 W, Maximum (110–130 W) selectable (Response time: responds to 0.1 ms pulse – off after 0.3 sec)
Semiconductor Complement	Integrated Circuits: 3 Transistors: 46 Diodes: 41
Dimensions	15.75"(W) x 7.44"(H) x 9.76"(D) 400 mm(W) x 189 mm(H) x 248 mm(D)
Weight	27.6 lb (12.5 kg)

• Specifications and appearance design are subject to change for further improvement without notice.

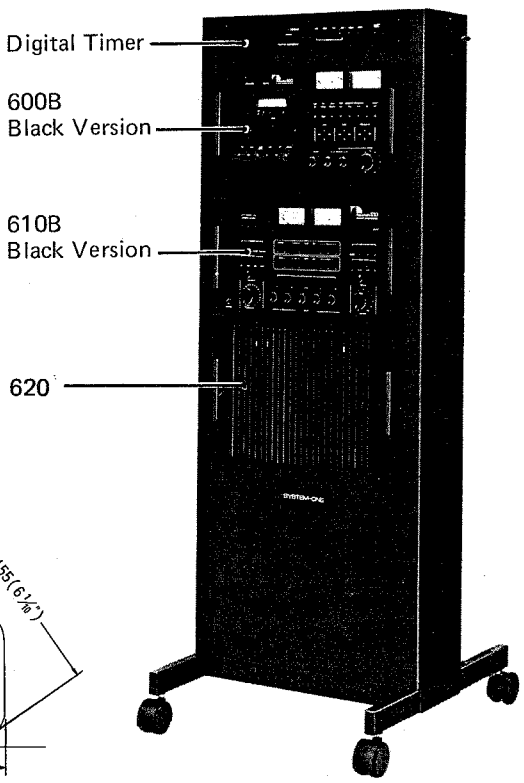
Bridging Adaptor BA-100

Permits the use of he Nakamichi 620 as a Balanced Transformerless (BTL) monaural power amplifier delivering a minimum of 350 watts continuous sine wave into 8 ohms with otherwise no change in performance specifications. For use with loudspeaker systems rated at 8 ohms or higher only.

OPTIONAL ACCESSORIES
NAKAMICHI SYSTEM ONE

(Custom Rack Mounted 600 Series Components)

With the introduction of the 620 Power Amplifier, Nakamichi offers a custom rack mount for the 600 Series Components. The SYSTEM ONE module consists of the Nakamichi 600 Cassette Console, the 610 Control Preamplifier, the 620 Power Amplifier, and a unique multifunction digital program timer.



Dimensions